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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,498	10/23/2003	Karlheinz Winter	32128-187212	6037

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EXAMINER	
WOLLSCHLAGER, JEFFREY MICHAEL	

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1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/690,498	Applicant(s) WINTER ET AL.	
	Examiner JEFFREY WOLLSCHLAGER	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 14 July 2008.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 4-6,8-12,15,16 and 30-32 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 4-6,8-12,15,16 and 30-32 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 5/10/04.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 14, 2008 has been entered.

Response to Amendment

Applicant's amendment to the claims filed July 14, 2008 has been entered. Claims 5, 6, 8-12 and 30 are currently amended. Claims 31 and 32 are new. Claims 1-3, 7, 13, 14, and 17-29 have been canceled. Claims 4-6, 8-12, 15, 16 and 30-32 are pending and under examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4, 5, 8-12, 16 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ootsuji et al. (US 3,868,436) in view of Fuwa et al. (US 3,928,525) and Gould (US 3,331,100) and Schmid et al. (US 5,804,116).

Regarding claims 8, 30 and 32, Ootsuji et al. teach a method of extruding a peroxide crosslinked polymeric material over a conductor wherein a crosslinkable polymer, such as polyethylene, a peroxide/crosslinking agent and a stabilizing agent are fed to an extruder (col. 11, lines 36-col. 12, lines 4). The mixture is plasticated/melted in the extruder, but is not crosslinked (Abstract; col. 3, lines 46-56) (i.e. the polymer is heated above the melting point, but is maintained below the crosslinking temperature). Subsequent to exiting the extruder, the mixture enters a long die land (Figure 1; (4)) wherein the mixture is crosslinked to the desired extent (col. 4, lines 2-5; col. 5, lines 10-17; col. 9, lines 22-32). Ootsuji et al. teach that the temperature is optimized within the die land (col. 9, lines 43-67) and exemplify a temperature of 250 °C in the die land (Example 1). The examiner notes that the cited peroxides in Ootsuji et al. decompose at temperatures of 171 °C – 186 °C (col. 9, lines 56-62) and that the decomposition of the peroxide is what initiates the crosslinking of the polyethylene (i.e. the temperature in the die land is approximately 30-45% above the crosslinking temperature). Further, the examiner notes that the melting point of polyethylene is approximately in the range of 125 °C - 140 °C. Upon completing the extrusion process, Ootsuji et al. teach that the crosslinking may be as high as 98% (col. 10, lines 48-52).

Regarding the extrusion pressure, Ootsuji et al. teach and suggest that the pressure of the extrusion can be optimized and lessened by utilizing a lubricant in the die land portion (col. 10, lines 1-15; col. 10, lines 32-58). The examiner notes that a reduction of pressure in the die

land and the connected downstream equipment yields a corresponding reduction in the upstream extrusion pressure. Further, Ootsuji et al. suggest optimizing the extrusion temperature (col. 3, lines 46-56col. 9, lines 66-68) to ensure the material is plasticated/melted in the extruder while also ensuring the material does not reach the crosslinking temperature. Since temperature and pressure in the extruder are inextricably linked, a change in temperature also yields a corresponding change in pressure. Further still, Ootsuji et al. teach that in the instant process a screw extruder is usually employed, but that a ram extrusion process is also suitable (col. 9, lines 9-20). When describing the pressure in the ram extrusion process, Ootsuji et al. teach the pressure is instantaneously raised to 2000 atm/2026 bar or more. By analogy, achieving a similar pressure in the screw extruder of Ootsuji et al. would occur gradually, not "instantaneously". In such an analogized method of utilizing the screw extruder of Ootsuji et al., the pressure at some point prior to entering the die land (i.e. before entry to the extrusion die) of Ootsuji et al would meet the claimed pressures as the pressure gradually increases from atmospheric pressure to the extrusion pressure.

Ootsuji et al. do not teach forming a tubular article (i.e. the extruded material without a conductor) or that the extruder is heated externally and cooled internally. However, Fuwa et al. teach a highly analogous method of extruding crosslinkable polymeric materials wherein a coated conductor or a tubular article is produced to form a desired product and suggest that similar extrusion methods are suitable for producing both a coated conductor or a tubular article with a long land die wherein temperatures are chosen to form the article below the crosslinking temperature in the extruder and to then crosslink the material in the long land die portion (col. 1, lines 9-25; col. 8, lines 32-44; col. 10, lines 26-42; Example 1; claims 1, 10, 12 and 13). Additionally, Schmid et al. teach a method of extruding tubular materials (col. 1, lines 58-66; col. 2, lines 45-56; Abstract; Figure 1) over a mandrel where the extruder temperature is cooled with

a hollow screw (Figure 1 and 2; col. 10, line 17- col. 11, line 32) and Gould teaches that it is known in the art to electrically heat the barrel of the extruder while internally heating/cooling the screw in order to obtain a uniform temperature of the plastic melt and to achieve rapid heat plastification (col. 1, lines 9-33).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Ootsuji et al. and to have employed an extruder having internal cooling means, as suggested by Schmid and Gould, for the purpose, as suggested by Gould, of obtaining a uniform temperature of the melt in the extruder and to achieve rapid heat plastification. Further, it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Ootsuji et al., and to have formed a tubular article, as suggested by Fuwa et al., since Fuwa et al. suggest that such extrusion methods employing long land dies are known in the art to be suitable for forming both coated conductors and tubular articles.

As to claim 4, Schmid et al. disclose double screw extruders (col. 2, lines 45-68; col. 8, lines 57-58) as being suitable for processing large amounts of material. It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to have employed a double screw extruder while practicing the method of Ootsuji et al., as suggested by Schmid et al., for the purpose of producing desired amounts of products while achieving the desired degree of mixing.

As to claim 5, Ootsuji et al. teach heating the die land electrically (col. 9, lines 42-54) and Fuwa et al. disclose the die land is heated with a band heater (Figure 1; (6)).

As to claims 9 and 10, Ootsuji et al. teach plasticating/melting the material in the extruder, but not to a temperature that causes crosslinking. Further, Ootsuji et al. exemplify processing polyethylene, the same material disclosed in the instant application (paragraph

[0036], US 2004/0086592). As such, it follows that the polymer employed by Ootsuji et al. has a crosslinking temperature approximately 30% above the melting point of the polymer and that the temperature of the polymer prior to entry into the die land would be less than 30% above the melting point to ensure crosslinking did not occur in the extruder as explicitly taught by Ootsuji et al. Ootsuji et al. employ the same disclosed material, polyethylene. As such, the material has the same claimed physical properties.

As to claims 11 and 12, Ootsuji et al. employ polyethylene (col. 1, lines 36-38; Example 1). This is the same material employed in the instant application (paragraph [0036], US 2004/0086592). As such, the material has the same melting point and crosslinking temperature. Further, Ootsuji et al. employ peroxides that decompose at temperatures of 171 °C – 186 °C (col. 9, lines 56-62). The examiner notes that it is the decomposition of the peroxide that initiates the crosslinking of the polyethylene.

As to claim 16, Ootsuji et al. teach cooling the crosslinked material (Figure 1 (7); col. 4, lines 6-20).

As to claim 31, Ootsuji et al. employ organic peroxides (col. 9, lines 56-63).

Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ootsuji et al. (US 3,868,436) in view of Fuwa et al. (US 3,928,525) and in view of Gould (US 3,331,100) and Schmid et al. (US 5,804,116), as applied to claims 4, 5, 8-12, 16 and 30-32 above, and further in view of Munsell (US 3,095,608).

As to claims 6 and 15, the combination teaches the method set forth above. Ootsuji et al. do not teach inductively heating from the interior of the die or maintaining the temperature at a temperature above the crosslinking temperature after discharge from the extrusion die.

However, Munsell teaches and suggests inducting heat from the interior of the die (Figure (42); col. 2, lines 1-20) and maintaining the temperature above the crosslinking temperature for a period after leaving the die to ensure adequate crosslinking prior to being cooled (col. 4, lines 1-9; col. 5, lines 8-13).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Ootsuji et al. and to have inductively heated from the interior of the die and to have maintained the temperature at a temperature above the crosslinking temperature after discharge from the extrusion die as suggested by Munsell since Munsell suggests that such methods are an equivalent alternative means of achieving suitable crosslinking of extruded articles.

Response to Arguments

Applicant's arguments filed July 14, 2008 directed to the 35 USC 112, first paragraph rejection have been fully considered and they are persuasive. Applicant has provided a certified translation of the disputed language found in paragraph 1 on page 5 of the original foreign priority document. The certified translation recites that the pressure is "between approximately 700 to 1500 bar and is preferably 1200 bar". Additionally, applicant argues that the original disclosure does provide support for a "crosslinkable polymer" expressly at paragraph 0035. This argument is persuasive. As such, the rejection under 35 USC 112, first paragraph, has been withdrawn.

Applicant's other arguments filed July 14, 2008 have been fully considered, but they are not persuasive. Applicant argues that Ootsuji et al. do not teach the claimed extrusion pressure. Specifically, applicant argues that the examiner's discussion of pressures downstream of the extruder (e.g. long land portion and cooling device) fails to teach or suggest the claimed

extrusion pressure and then points to the portion of Ootsuji et al. that discloses an instantaneous extrusion pressure of 2026 bar/2000 atmospheres. This argument is not persuasive. As an initial matter, the examiner notes that the previous discussion by the examiner directed to pressure conditions downstream of the extruder are relevant and help establish the prima facie case. These pressures and conditions employed by Ootsuji et al. downstream impact the upstream extrusion pressure. For example, without utilizing a lubricant in the die land Ootsuji et al. would need to employ a mightier feeding mechanism/extruder (i.e. a higher pressure extruder) (col. 10, lines 1-7). However, by employing the lubricant Ootsuji et al. can employ a conventional mechanism/extruder. Further, the examiner notes that Ootsuji et al. extrude the same disclosed materials (e.g. polyethylene) and suggest achieving the same material condition prior to entering the extrusion die (i.e. at a temperature high enough to plasticate/melt the polyethylene, but not at a temperature high enough to crosslink the polyethylene). As such, Ootsuji et al. suggest optimizing the temperature of the material in the extruder. Since the temperature and pressure in the extruder are linked, optimizing the extrusion temperature also optimizes the extrusion pressure. Further still, as pointed out in the arguments, Ootsuji et al. teach that in the instant process a screw extruder is usually employed, but that a ram extrusion process is also suitable (col. 9, lines 9-20). When describing the pressure in the ram extrusion process, Ootsuji et al. teach the pressure is instantaneously raised to 2000 atm/2026 bar or more. By analogy, achieving a similar pressure in the screw extruder of Ootsuji et al. would occur gradually, not "instantaneously". In such an analogy, in the method of utilizing the screw extruder of Ootsuji et al., the pressure at some point prior to entering the die land of Ootsuji et al would meet the claimed pressure range, “before entry to the extrusion die”, as the pressure gradually increases from atmospheric pressure to the extrusion pressure. The examiner further submits that there is no evidence on the record, including the

instant specification, to suggest that the claimed extrusion pressure yields new or unexpected results. Accordingly, absent a showing of persuasive evidence to the contrary, it is the examiner's position that a *prima facie* case has been made.

Finally, applicant argues that the secondary references do not remedy the deficiencies of Ootsuji et al. This argument is not persuasive. For the reasons set forth above, the examiner submits that Ootsuji et al. reference does not have the argued deficiencies.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY WOLLSCHLAGER whose telephone number is (571)272-8937. The examiner can normally be reached on Monday - Thursday 6:45 - 4:15, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Wollschlager/
Examiner, Art Unit 1791

September 11, 2008